

Work Order ID 75068

October-17-11 10:47:23 AM

75068

Page 1


Item ID: D3488-042 **Accept** ***N900040100*** **Setup Start *NS1***
Revision ID: **Stop *NS2***
Item Name: Blade Fitting Assembly, RH
Start Date: 17/10/2011 **Start Qty:** 16.00 ***16*** **Cust Item ID:**
Required Date: 28/10/2011 **Req'd Qty:** 16.00 ***16*** **Customer:**
Reference:

Approvals: **Process Plan:** M.L.J. **Date:** 11/10/11 **Tooling:** _____ **Date:** _____ **Run Start *NR1***
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop *NR2***


Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D3488	Rev B

100 ***100*** DOOSAN LATHE 0.00
 Doosan **Memo** 0.00
 Doosan Lathe 1-Turn as per Dwg DSK 101 & Folio FA6272-Deburr

 11/10/26

110 ***110*** QC2- Inspect parts off machine FAI/FAIB 0.00
 QC **Memo** 0.00
 Quality Control

 11/10/26

120 ***120*** HAAS CNC VERTICAL MACHINING #1 0.00
 HAAS I **Memo** 0.00
 HAAS CNC vertical machine #1 1-Machine as per Folio FA627 & Dwg D34882-Deburr

 11/11/04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3488-042 PAR #: _____ Fault Category: Machin NCR: Yes No DQA: 0 Date: 11/11/18
 Resolution: Scrap Disposition: Scrap QA: N/C Closed: CK Date: 11/11/18

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
11/10/25	100	dimension 2.620 is 2.584. - measuring probe didn't measure tool properly - cleaned probe R.C. Machine malfunction + LOA. Probe wasn't closed before each use.	<u>WJ</u> 10/26/11 PS1042	Too large effect on strength of part in critical area. Scrap part. CP11.10.26 Qty 1.	<u>SA</u> 11/10/25	<u>S</u> 11/10/25	<u>WJ</u> 10/26/11 PS1042	<u>S</u> 11/10/25
11/11/04	120	y origin in first op wrongfully taken. R.L. LOA operator error. new operator	<u>WJ</u> 11/03/11 PS1042	Scrap + Destroy NO Replace.	<u>FK</u> 11/11/04	<u>WJ</u> 11/11/08	<u>WJ</u> 11/03/11 PS1042	<u>S</u> 11/11/08

NOTE: Date & initial all entries

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Item ID: D3488-042 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Blade Fitting Assembly, RH
Start Date: 17/10/2011 Start Qty: 16.00 ***16*** Cust Item ID:
Required Date: 28/10/2011 Req'd Qty: 16.00 ***16*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 *130* QC Quality Control	QC2- Inspect parts off machine FAI/FAIB Memo	0.00 0.00		<i>FK - 11/11/04</i>		<u>12</u>			
140 *140* QC Quality Control	QC8- Inspect parts - second check Memo	0.00 0.00		<i>OK 11/11/08</i>		<u>12</u>			
150 *150* HandFinish Hand Finishing	Chemical Conversion Coat per QSI005 4.1 Memo	0.00 0.00							<i>1.2X Ø m - 11/11/10</i>

W/O:		75068 WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3488-012 PAR #: _____ Fault Category: Machin NCR: Yes No DQA: _____ Date: _____
 Resolution: Scrap Disposition: Scrap QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
11.11.08	120	RO.062 Rad is missing on part.	CP 11.11.08 Q51042	Scrap part. High stress part & no rad will create stress concentration REF D.S. EMAIL Qty x2	11/11/08 S ulul02		CP 11.11.08 Q51042	S 11/11/08

NOTE: Date & initial all entries

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Item ID: D3488-042 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Blade Fitting Assembly, RH
 Start Date: 17/10/2011 Start Qty: 16.00 ***16*** Cust Item ID:
 Required Date: 28/10/2011 Req'd Qty: 16.00 ***16*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum	0.00							
160									
Powdercoat		0.00							
Powder Coating	Memo								
	START TIME: 7:30								
	FINISH TIME: 8:00								
	OVEN TEMPERATURE:								
170	QC3- Inspect Part Finish	0.00							
170									
QC	Memo	0.00							
Quality Control									
180	HandFinishing	0.00							
180									
HandFinish	Memo	0.00							
Hand Finishing	Install Inserts as per Dwg D3488								

12x Ø M-11/11/11

12 BK11-11-11

12x Ø H 11/11/15
COUNTED

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Approvals:	Process Plan: _____	Date: _____	Tooling: _____	Date: _____	Run	Start	*NR1*
	QC: _____	Date: _____	SPC (Y/N): _____	Date: _____			

[illegible]

11-11-15 (128)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

October-17-11 10:47:28 AM

Page 1

Work Order ID: 75068

75068

Parent Item: D3488-042

D3488-042

Parent Item Name: Blade Fitting Assembly, RH

Start Date: 17/10/2011

Required Date: 28/10/2011

Start Qty: 16.00

Required Qty: 16.00

Comments: IPP Rev:A New Issue 06-02-28 JLM
IPP Rev:B As per Rev B 06-03-30 JLM
IPP Rev:C Now On Doosan Lathe JLM Verified BY:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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ALS7-1032-225

Purchased

No

Each

1,173.000

AI S7-1032-225

**

INSERT

ALS4-1032-225

X

Location

Loc Qty

Loc Code

ST282

1173

M118466

x48

100896

146

111529

27

118520

1000

D6103-003

Manufactured

No

Each

19.0000

D6103-003

**

Round Billet, Aluminum

16

5/10/25

Location

Loc Qty

Loc Code

MAT

7

71884

7

4

MAT043

12

69901

3

71178

9

3

9

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	75068
Description: Blade Fitting, RH / Turning Detail for D3488-1/-2	Part Number:	D3488-2
Inspection Dwg: D3488 / DSK101 Rev: B / D		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Lathe Section						
Ø2.150	+/-0.005	2.150	/			
Ø2.780	+/-0.005	2.778	/			
Ø3.125	+/-0.010	3.123	/			
Ø3.346	+/-0.010	3.348	/			
0.125 x 45°	+/-0.010 x +/-0.1°	0.125 x 45°	/			
8.000	+0.030/-0.000	8.014	/			
9.250	+/-0.010	9.245	/			
0.188	+/-0.010	0.185	/			
R0.032	+/-0.010	R0.032	/			
R0.062	+/-0.010	R0.062	/			
Ø0.297	+0.005/-0.001	0.298	/			
Ø0.430	+/-0.010	0.432	/			
0.100	+/-0.010	0.099	/			
0.125	+/-0.010	0.132	/			
2.620	+/-0.010	2.615	/			
3.500	+/-0.010	3.500	/			
1.005	+/-0.010	1.005	/			
Ø0.484	+0.005/-0.001	0.487	/			
1.180	+/-0.010	1.180	/			
3.150	+/-0.010	3.150	/			
3.070	+/-0.010	3.066	/			
R0.063	+/-0.010	R0.062	/			

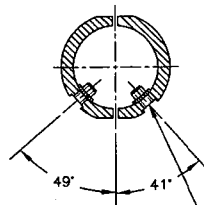
DART AEROSPACE LTD	Work Order:	<i>75061</i>
Description: Blade Fitting, RH / Turning Detail for D3488-1/-2	Part Number:	D3488-2
Inspection Dwg: D3488 / DSK101 Rev: B / D		Page 2 of 2

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Milling Section						
Ø0.508	+0.006/-0.001	<i>0.5085</i>	✓		<i>FK-04</i>	<i>Vern.</i>
0.750	+/-0.010	<i>0.744</i>	✓		<i>31006</i>	<i>Height gauge.</i>
1.500	+/-0.010	<i>1.500</i>	✓		<i>FK-04</i>	<i>Vern.</i>
11.18	+/-0.030	<i>11.162</i>	✓		<i>31006</i>	<i>Height gauge.</i>
R0.062	+/-0.010	<i>0.062</i>	✓		<i>rad gauge</i>	
0.125	+/-0.010	<i>0.117</i>	✓		<i>FK-04</i>	<i>Vern.</i>
0.590	+/-0.010	<i>0.590</i>	✓		<i>31006</i>	<i>Height gauge.</i>
0.793	+/-0.010	<i>0.792</i>	✓		<i>FK-04</i>	<i>Vern.</i>
1.351	+/-0.010	<i>1.357</i>	✓		<i>31006</i>	<i>Height gauge.</i>
1.317	+/-0.010	<i>1.310</i>	✓		<i>FK-04</i>	<i>Vern.</i>
1.802	+/-0.010	<i>1.803</i>	✓		<i>FK-06</i>	<i>Depth gauge.</i>

Measured by:	<i>FK.</i>	Audited by:	<i>mf</i>	Prototype Approval:	N/A
Date:	<i>11/11/04</i>	Date:	<i>11/11/08</i>	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	06.03.31	New Issue	KJ/JLM	
B	08.09.19	Reformat P/O D3488-042	KJ/JLM	
C	08.12.02	Dimension 8.000 removed	KJ/JLM	<i>[Signature]</i>

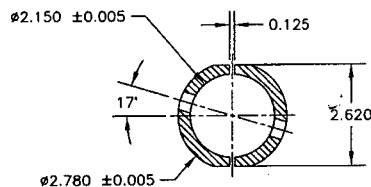
SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 75068
11-10-17



SECTION B-B

Ø0.297
C'BORE Ø0.430 x 0.100
INSTALL ALS4-1032-225 (OR AKS4-1032-225
OR ALS7-1032-225 OR AKS7-1032-225)
INSERTS AFTER FINISH
(4 PLACES)

4



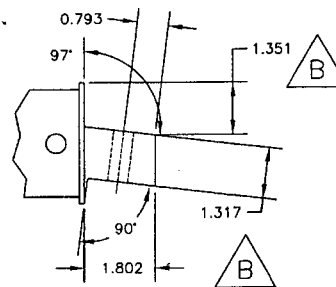
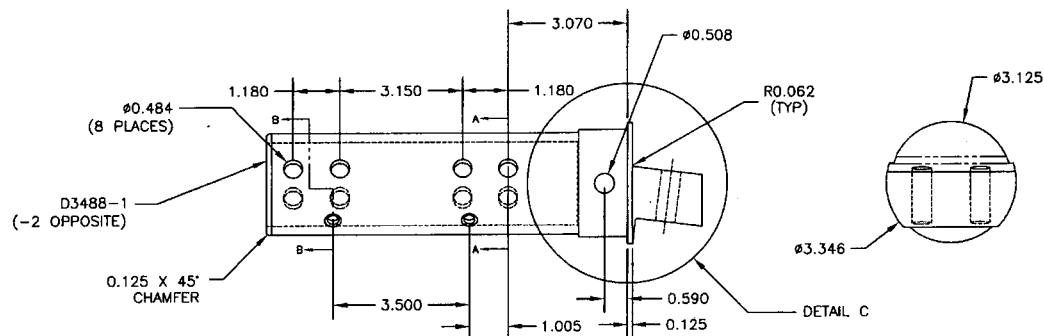
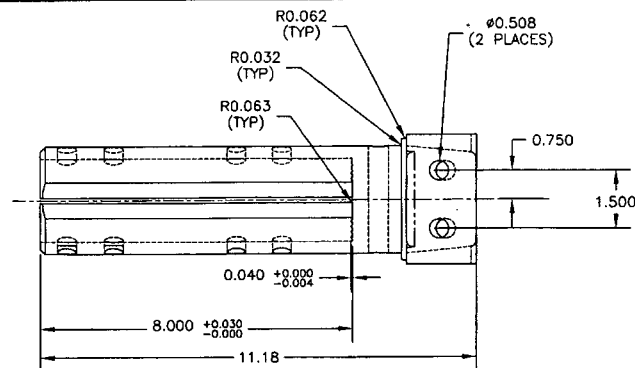
SECTION A-A

D3488-041/-042 BLADE FITTING ASSEMBLY PARTS LIST

QTY -041	QTY -042	PART NUMBER	DESCRIPTION
X	X	D3488-041	BLADE FITTING ASSEMBLY (LH)
		D3488-042	BLADE FITTING ASSEMBLY (RH)
1		D3488-1	BLADE FITTING (LH)
	1	D3488-2	BLADE FITTING (RH)
4	4	ALS4-1032-225 or AKS4-1032-225 or ALS7-1032-225 or AKS7-1032-225	INSERT

D3488-041/-042 BLADE FITTING

- MATERIAL: MAKE D3488-1/-2 FROM ALUMINUM 7075-T7351 ROUND BAR
PER QQ-A-225/9
(REF. DART MATERIAL SPEC M7075T73R)
- FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1
POWDER COAT WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
- BREAK UNMARKED SHARP EDGES 0.010 TO 0.020
- INSTALL INSERTS AFTER POWDER COAT
- ALL DIMENSIONS ARE IN INCHES
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED



DETAIL C

D3488-041 SHOWN (D3488-042 OPPOSITE)

RELEASED
06.03.15 PH
PER DS
ECN #734

B	06.03.15	CHANGE THICKNESS
A	05.12.20	NEW ISSUE
DESIGN	PH	DRAWN BY PH
CHECKED	PH	APPROVED PH
DATE	06.03.15	TITLE
		BLADE FITTING
		DART AEROSPACE USA, INC.
		PORT HADLOCK, WA
		D3488
		SCALE
		1:3

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DART AEROSPACE USA, INC.

Chris Provencal

From: David Shepherd <dshepherd@dartaero.com>
Sent: Tuesday, November 08, 2011 11:25 AM
To: 'Chris Provencal'
Cc: 'Mike Petsche'; 'Bill Beckett'
Subject: RE: NCR D3488

Chris,

Like you say, there is a lot of load going thru these parts, in both float and non-float applications. I don't think we should mess around making the parts thinner and trying to put in the radius. Unfortunately, we should scrap the parts.

Bill,

Just FYI ... More scrap ... Can only think that we had the wrong tool loaded into the machine, which is a careless error. We've been making these parts for years ...

David

From: Chris Provencal [<mailto:cprovencal@dartaero.com>]
Sent: November-07-11 2:01 PM
To: David Shepherd
Cc: Mike Petsche
Subject: NCR D3488

David,

Qty(2) D3488 -042 Blade Fitting.

There should be a 0.062 rad on the top surface of the bolt attachment face (see attached). They've machined it with no rad what-so-ever (the bottom surface is OK). There is a lot of stress being transferred in this area and I can't justify not having a rad in this area.

The only solution (in my opinion) would be to machine off 0.05" from the top surface, and put in a 0.05" rad in the corner. This would reduce the strength of the section. The margins of safety of SR-D350-636-3 would be reduced to 0.23 (was 0.34, ultimate float loads), 0.10 (was 0.48, comparison to Apical bolt), and 0.57 (was 0.71, comparison to D2742). Would this be acceptable?

Just trying to save these parts as they're expensive.

-Chris

